



## Solvent dispersible interpenetrating polymer networks

**Description of Technology:** The present invention is directed to a novel composition of matter which is a type of interpenetrating polymer network. The present invention also relates to liquid and solid imaging compositions containing such polymer products and including the use of such compositions as photoresists and solder masks.

### Patent Listing:

1. **US Patent No. 5,985,998** Issued November 16, 1999, "Solvent dispersible interpenetrating polymer networks"

<http://patft.uspto.gov/netacgi/nph-Parser?Sect2=PTO1&Sect2=HITOFF&p=1&u=%2Fnetacgi%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&d=PALL&RefSrch=yes&Query=PN%2F5985998>

**Market Potential:** Interpenetrating polymer network (also known as IPN) systems are finding increasing uses in polymer product development. Such interpenetrating polymer network systems and developments are described by L. H. Sperling in "Interpenetrating Polymer Networks and Related Materials", Plenum Press, New York, 1981, in pages 21-56 of "Multicomponent Polymer Materials" ACS Adv. in Chem. No. 211, Edited by D. R. Paul and L. H. Sperling, ACS Books, Washington, D.C., 1986, and in pages 423-436 of "Comprehensive Polymer Science", Volume 6, "Polymer Reactions", Edited by G. C. Eastmond, A. Ledwith, S. Russo, and P. Sigwalt, Pergamon Press, Elmsford, N.Y., 1989. Interpenetrating polymer networks are defined in such publications as a polymer system comprising two or more constituent polymer networks that are polymerized and/or crosslinked in the immediate presence of one another. In effect, such a polymeric system comprises two or more network polymers that interpenetrate each other to some extent and which are not chemically bound but which are con-catenated such that they can not be separated unless chemical bonds are broken. Each constituent polymer network is characterized as an extensive three-dimensional polymer structure in which most chains are crosslinked at least twice to other chains so that the network structure has dimensions comparable with those of the macroscopic material. The constituent networks may be catenated, i.e., physically interlocked, and may also be subsequently chemically linked together to a limited extent. While the above definition describes an ideal structure, it is recognized that phase separation may limit actual molecular interpenetration. Thus the material sometimes may be described as having "interpenetrating phases" and/or "interpenetrating networks".

### Benefits:

- Useful in preparing protective and/or decorative film coatings

### Applications:

- Interpenetrating polymer networks which are dispersible in conventional coating solvents

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